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(51) INT CL⁶
G06F 15/50

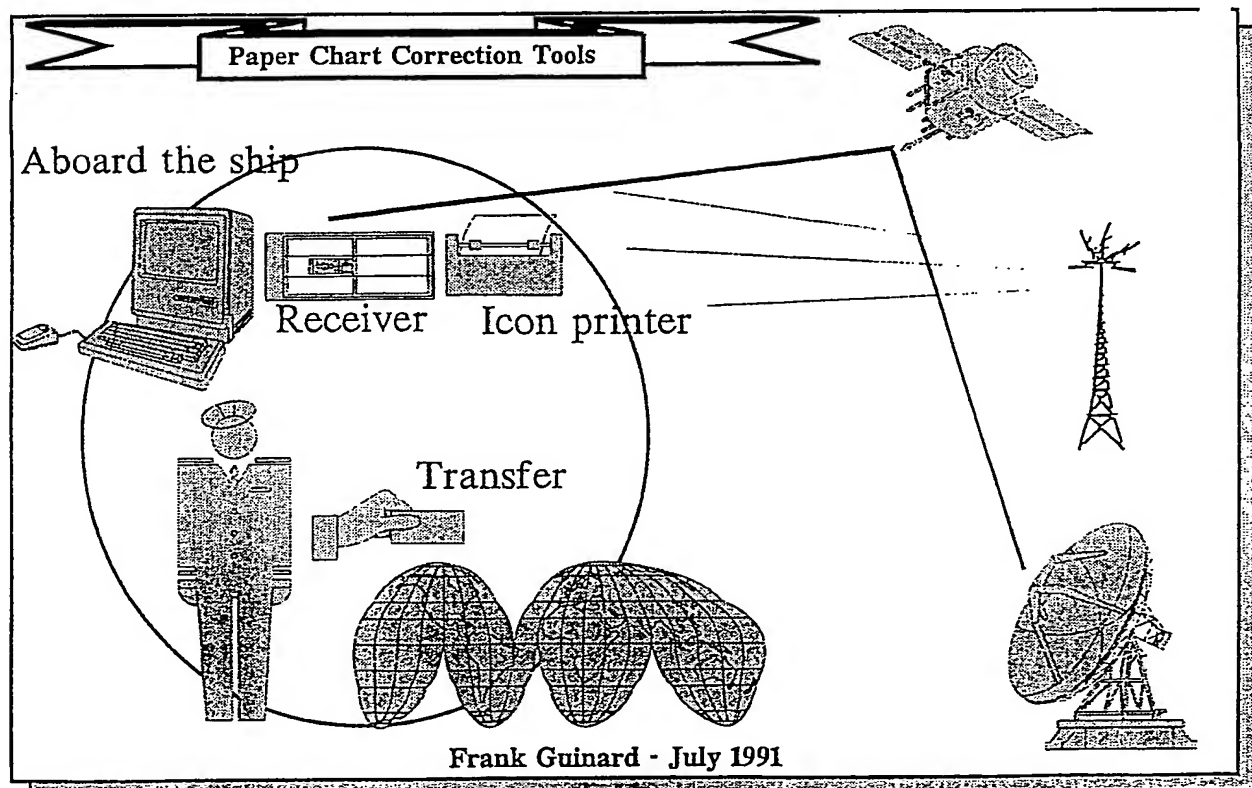
(52) UK CL (Edition L)
G4A AUXV
U1S S1022 S1834 S2147

(56) Documents cited
GB 2119140 A US 4718784 A

(58) Field of search
UK CL (Edition K) B6F FAJ, G4A AUX
INT CL⁵ B41J, G06F
Online database: W.P.I.

(54) Updating marine charts

(57) The system, comprising various combinations of software and hardware tools, helps the navigator to update or correct marine paper charts. The main feature of the system is its ability to print graphics on labels or transfers that can be stuck onto paper charts. If the updating information is temporary, the labels can be peeled off and discarded. Alternatively, paper charts can be updated directly by using an inkjet printer. The graphics may be printed in colour. The system is used on board a ship and receives the updating information via, e.g., a satellite link. Positional information indicates where the label or transfer is to be attached to the paper chart.

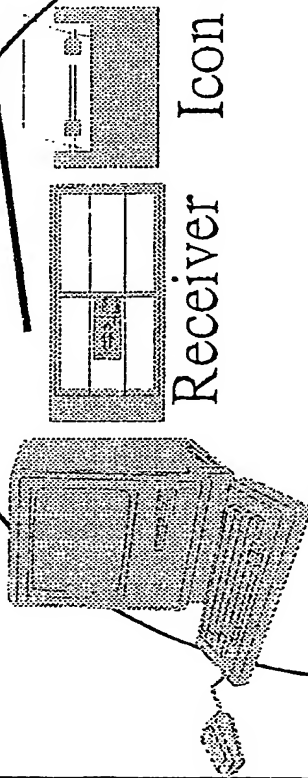


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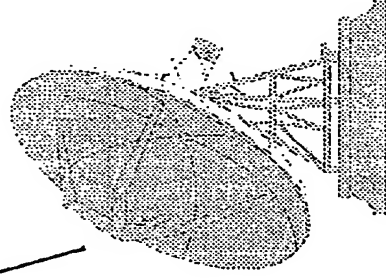
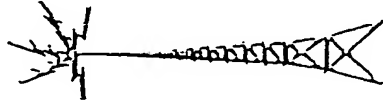
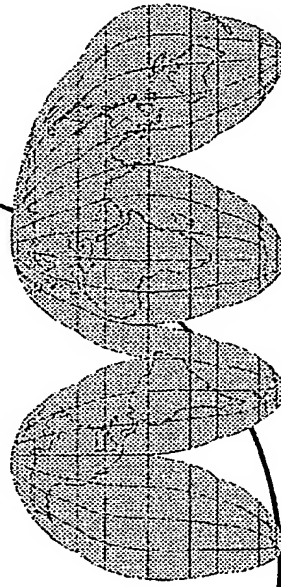
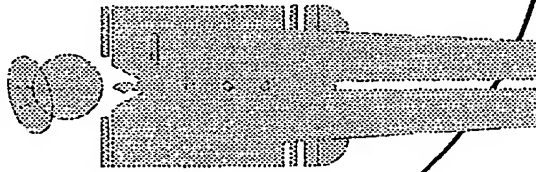
Paper Chart Correction Tools

Aboard the ship



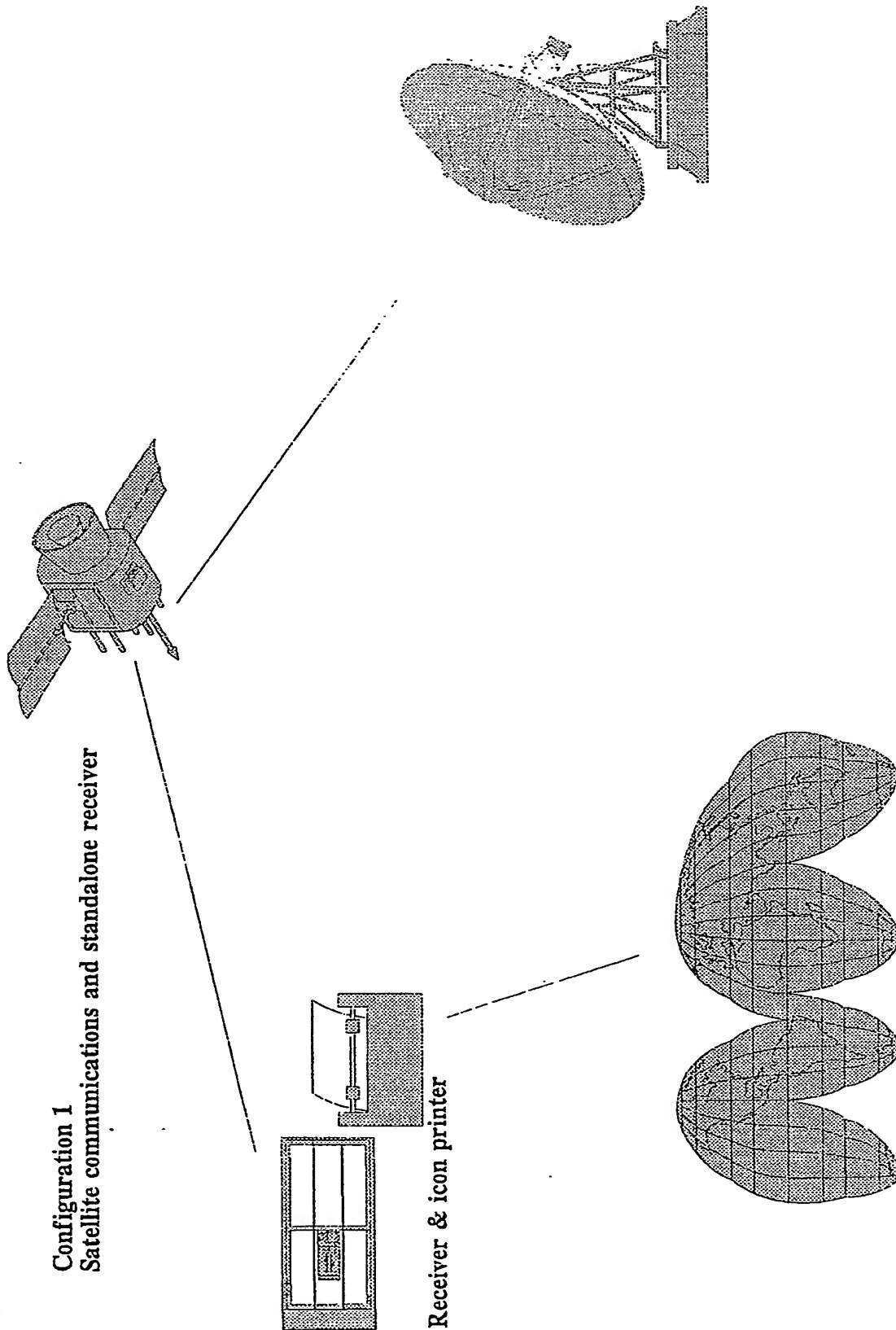
Receiver Icon printer

Transfer

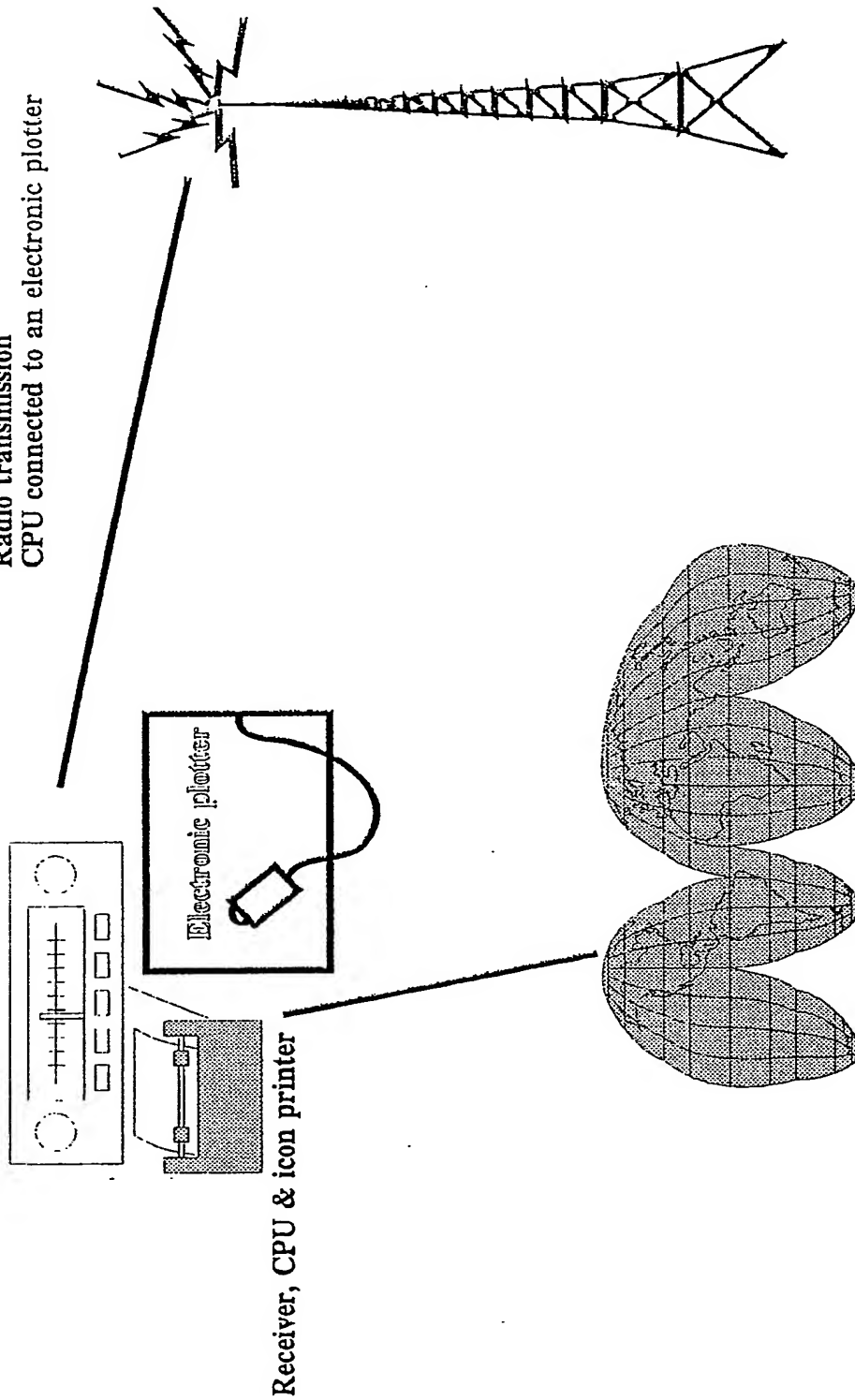


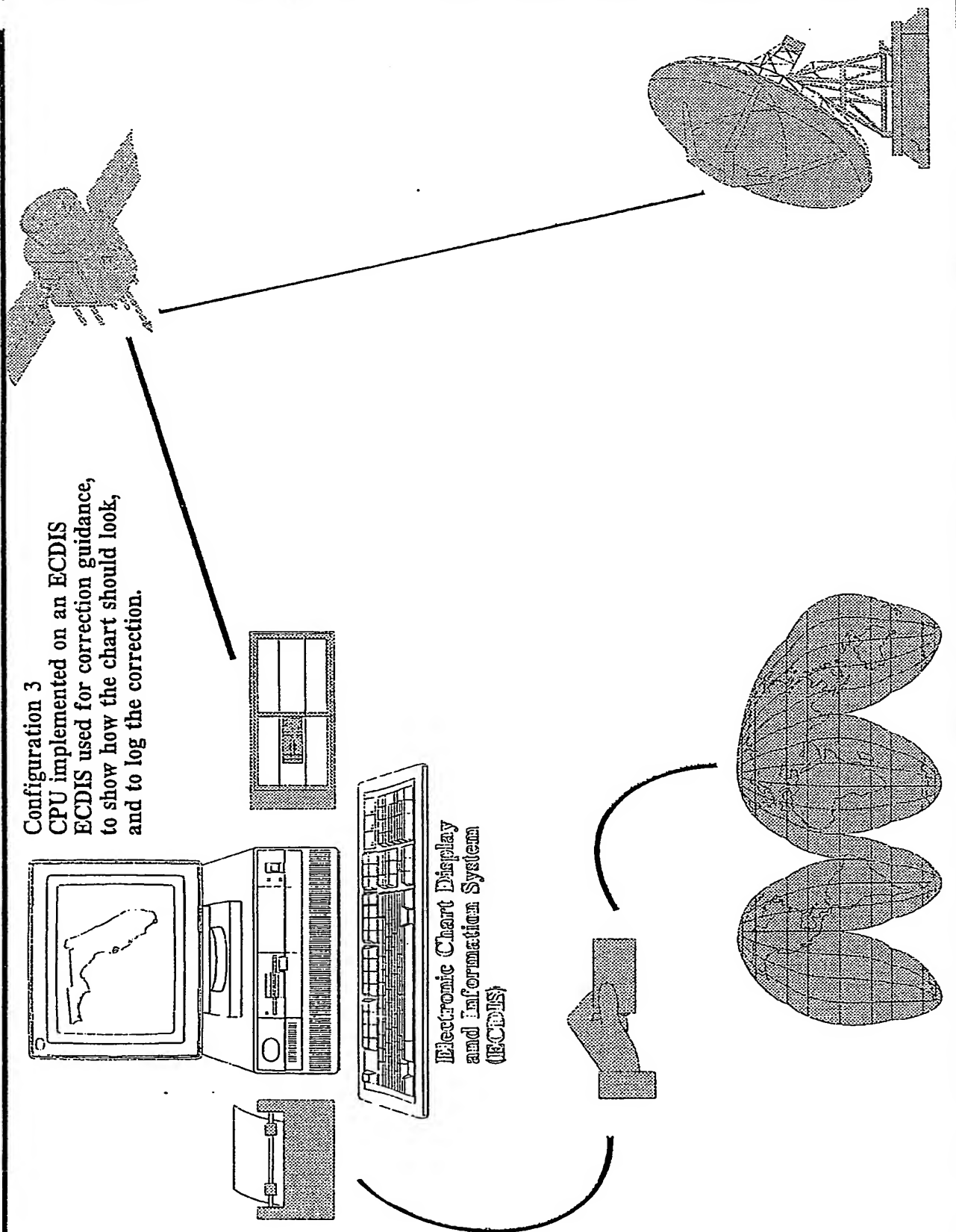
Frank Guinard - July 1991

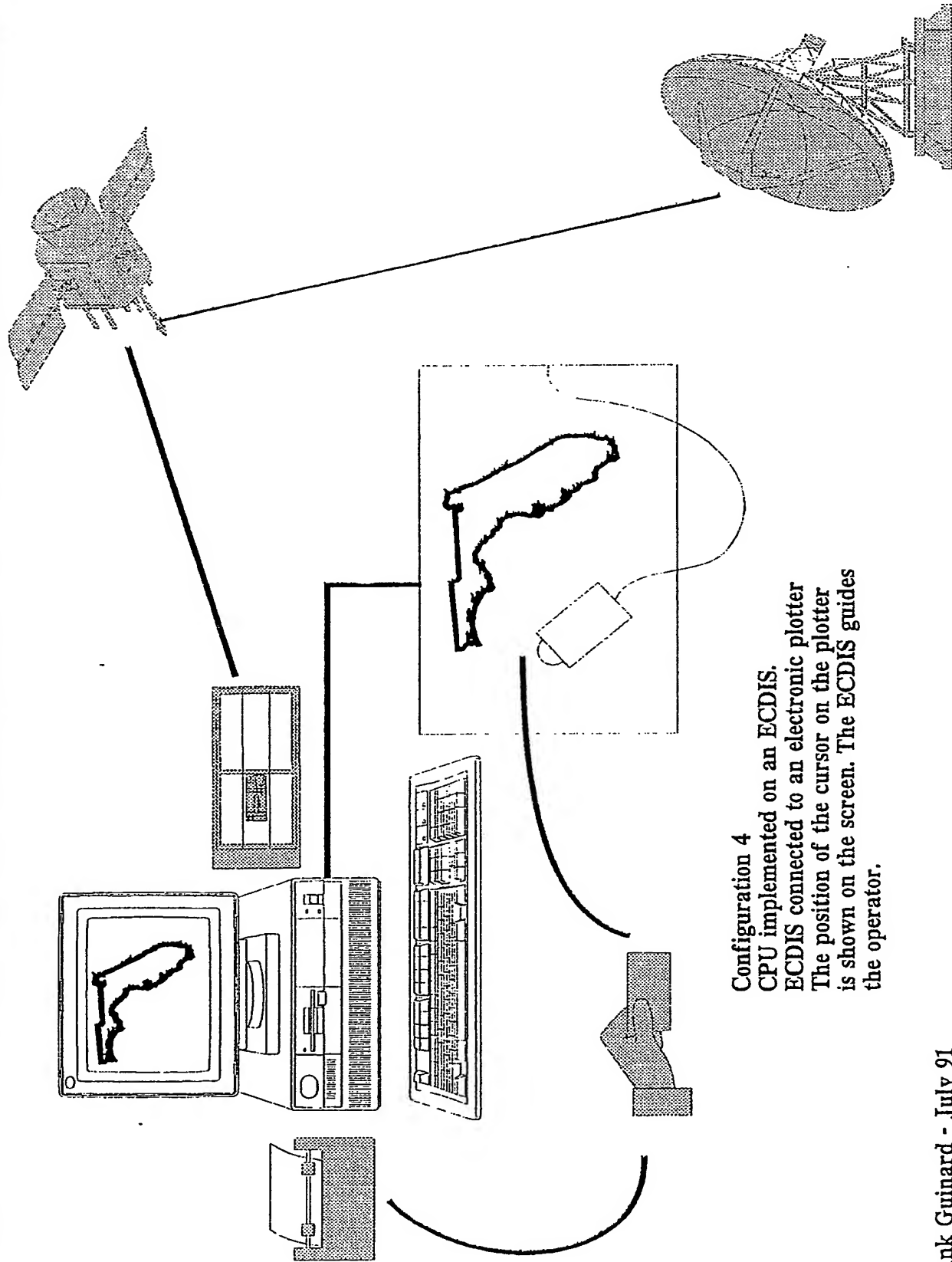
Configuration 1
Satellite communications and standalone receiver



Configuration 2
Radio transmission
CPU connected to an electronic plotter







Configuration 4
CPU implemented on an ECDIS.
ECDIS connected to an electronic plotter
The position of the cursor on the plotter
is shown on the screen. The ECDIS guides
the operator.

Paper Chart Correction Tools

A set of modular chart correction aids for the navigator

Objective : the system facilitates the tedious and error-prone process of correcting marine charts. It makes updates easier, faster and more accurate. It improves safety of navigation and alleviates the workload on the bridge. The system (named PACT) is modular and can be interfaced with a wide range of navigation equipment.

1 - System description.

1-A. Background information.

Until now ships at sea carrying a set of paper charts have to rely on their owners for the supply of chart corrections. They are usually received by mail when the ship is in port and take the form of a booklet, Notices to Mariners. They are compiled all over the world by government executive agencies, companies and hydrographic offices. When a crew begins a long voyage, it is not uncommon to receive dozens of booklets at the same time. It may take several days to clear the backlog of corrections, most of which are by that time already obsolete.

To overcome this problem, several companies have developed electronic chart display & information systems (ECDIS). These systems can display charts on a computer screen and manipulate them in various ways. Information such as the position of buoys, submarine cables and offshore rigs can be electronically added to the chart. Operation can be manual or automatic. In the latter case, the information can be received on a floppy disk, via radio or via satellite.

1-B Aims of PACT.

Although the value of ECDIS is undisputed, a large number of mariners

- cannot afford them
- do not have the technical skills to operate them
- do not feel the need for such applications.

But the need for good-quality, updated nautical documentation is universally acknowledged. Furthermore, there is a continuing legal requirements to carry a set of updated charts even when ECDIS is fitted.

PACT aims to provide navigators with a set of tools for the correction of paper charts. It is a low- cost, user-friendly system which should find applications in the yachting, deep-sea fishing, and trading markets.

1-C Brief description.

The system comprises :

- * the central processing unit : decompresses the data, translates it into graphics and sends it to the icon printer. It acts as an interface with peripheral equipment such as keyboard, display, and navigation system. It also keeps a log of corrections for later reference.

- * the control unit : display, keyboard, mass memory (ie, personal computer)

- * the icon printer : small printer capable of printing colour transfers similar to those used by children to decorate models of trucks or boats. Such transfers can be stuck onto the map very easily. The user has only to position the transfer correctly. Alternatively, a small colour inkjet printer can be used to print directly onto the map. In this case, the printer can be interfaced with an electronic plotting table and with the control unit.

- * the receiving unit : acquires the data used to correct the charts. It can take several forms :

* a disk reader (the medium can be RAM card, ROM, floppy disk, optical disk, tape, etc).

* a radio receiver equipped with a modem. Examples include Navtex, EGC, TOR, Radiotelex, Maritex, Inmarsat-C.

* a dial-up modem attached to a telephone line, a UHF or VHF link, or an Inmarsat-A satellite ship earth station.

4 - Conclusion

Main benefits of the system:

Improves safety at sea

Reduces workload on the bridge

Makes chart corrections easier

Can be used by anyone

2 - Claims

1 - system converting electronic data into graphics that can be transferred to a paper chart.

2 - value-added service providing the facilities of the system described in Claim 1.

3 - equipment and associated peripherals performing functions described in Claims 1 and 2.

4 - microprocessor and its associated software converting data into a format that is suitable for a printer producing labels for marine charts. The page-description language of the printer can support colour.

5 - device converting data into labels that can be applied to a paper chart, on a nautical document, or a technical manual. The labels take the form of paper stickers or transparent transfers. Suitable printer types include inkjet, thermal, and wax.

6 - hardware and associated software performing the following functions :

- * guiding the user through the process of chart correction by means of indications on an electronic plotter (eg, indication of the position at which the chart has to be amended).

- * indicating on an electronic chart system where the correction has to be made, and what the paper chart should look like after correction.

- * a combination of these functions

7 - combinations of the different components of the system performing functions described in Claim 1, including the following configurations:

- * standalone, dedicated system including a receiver, a microprocessor and a printer.

* multi-purpose system comprising a Navtex receiver, a microprocessor and a printer.

* a radio receiver (such as Inmarsat-C, EGC, Maritex, TOR, or a radio receiver attached to a modem), a personal computer and a printer.

* a dial-up modem attached to a telephone line and a personal computer performing functions described in Claim 1.

8 - associated computer software and administrative arrangements aimed at providing the service described in Claim 1.

9 - documentation, user guides, training manuals, operating procedures, and system description manuals related to the system described in Claim 1.

10 - format and syntax of correction messages.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number
 9115710.7

Relevant Technical fields

(i) UK CI (Edition K) G4A - AUX; B6F - FAJ

(ii) Int CI (Edition 5) G06F; B41J

Databases (see over)

(i) UK Patent Office

(ii) WPI

Search Examiner

M J JONES

Date of Search

4 NOVEMBER 1991

Documents considered relevant following a search in respect of claims 1-10

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB A 2119140 (MCMICHAEL) see page 3 lines 14-17	1-3,8
X	US 4718784 (ELECTRONIC PROGRAMMING CORPORATION)	1-3, 5,8

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

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